

## **SECTION I: Public School Educator Supply and Demand in Connecticut: A Look Toward the 21st Century**

This report summarizes the results of a comprehensive study of public school educator supply and demand that the Connecticut State Department of Education has conducted over the course of the last year. The study was designed to:

- examine recent past trends in the national and state educator labor market,
- determine the current status of public school staffing in the state,
- project estimates of the relationship between demand and supply over the next five years for teachers, professional support staff, and administrators, and
- identify possible policy interventions to off-set imbalances between educator demand and supply.

The report is separated into two sections. Section I provides a synopsis of the study's findings regarding the demand for and supply of educators over the next five years. The data are disaggregated into eighteen subject<sup>1</sup> areas, since supply and demand differs across teacher assignments. Section I ends with a set of recommendations to address possible shortages. Section II provides details of the 1998-99 status of Connecticut's public schools and its workforce, and discussions of the factors that contribute to demand and supply estimates.

### **A National Overview**

Current national trends in public school enrollment and staffing have once again ignited the debate over whether or not the nation is facing a severe public school teacher shortage. The U.S. Department of Education estimates that the demand for public school teachers will increase as elementary, middle and high school enrollments increase dramatically over the next 10 years. This will occur at the same time as a large portion of the baby-boomers who entered the teaching profession in the late 1960s and early 1970s become eligible for retirement. Meanwhile, other trends suggest that the supply pool of public school teachers is likely to be more constricted than it was in the past. These include state-specific changes in licensing requirements to raise standards for new teachers, an acute shortage of substitute teachers who traditionally have been drawn from state-level 'reserve pools,' increased reports of emergency permits and out-of-field teaching, and a solid economic climate with historically low unemployment rates outside of education. The coupling of the factors which suggest the demand for new teachers will be increasing with those indicating the supply is decreasing has led policy analysts and educational researchers to question whether the

nation's public school districts will be able to attract the estimated two million new teachers that will be needed over the next decade.

National projections of an additional demand for two million teachers mask differences in need across assignment areas and among states and communities within states. This report draws information from a variety of sources<sup>2</sup> and examines the issues underlying educator demand and supply as they apply specifically to Connecticut public schools. The following section provides a summary of projections over the next five years, identifying assignment areas where shortages of qualified candidates have existed in the past and currently exist, where demand/supply imbalances are emerging and the potential for future shortages exists, and where no shortages are foreseen.

### **Educator Demand and Supply: Where We Stand -- What We Can Expect**

Connecticut has a solid history of staffing its public school classrooms with well-qualified professional educators. The state continued to be able to attract adequate pools of professional educators to its public schools over the course of the last decade when it raised its standards for certification in most assignment areas to be among the highest in the nation. Some districts in the state have had difficulty recruiting educators to fill positions in selected assignment areas, the same assignment areas for which shortages exist in other states. By understanding the interface between the factors that have affected and continue to affect the demand for and supply of public school educators, the state can prepare itself to address any potential future imbalances.

The total demand for Connecticut public school educators is the number of educators that districts employ. It is a function of educator retention from one year to the next, changes in student enrollment, estimates of districts' responsiveness to those changes, vacancies that existed in October 1998, and current policy initiatives. Average annual vacancies are the number of new educators who are expected to be hired each year to meet the projected total demand. Vacancies are calculated as the difference between the total demand and the number of educators from the previous year who continue to work in the state's public schools with adjustments for transfers among assignment areas and the shift of continuing staff from part-time to full-time positions.

The annual supply pool of new educators consists of all individuals who are certified in Connecticut, not currently employed in the public schools and willing to fill vacant public school positions. Connecticut draws its annual educator supply from five primary sources: 1) graduates of Connecticut and out-of-state teacher preparation programs and others newly certified in the state during the previous year; 2) the 'reserve pool' of experienced Connecticut teachers who have interrupted their career or are on leave; 3) the 'reserve pool' of inexperienced teachers who were first certified prior to the previous year; 4) graduates of the alternate route program; and 5) experienced teachers from other states.

Estimating the depth of the supply pool is an imperfect science. All newly certified educators do not apply for and secure positions during the year following their certification. Not all newly or previously certified individuals are willing to pursue jobs in all community types or regions of the state. Neither do all former teachers choose to return to the profession. Nor do all previously certified individuals continue to pursue careers in education. A detailed discussion of the factors contributing to demand and supply is presented later in the report.

The underlying purpose of examining educator demand and supply is to determine whether there are likely to be shortages of educators to staff the state's public schools in the future, and, if there are, then to explore intervening strategies that the state and districts can employ to mediate the problem. A severe imbalance between educator demand and supply can be problematic in either direction. When demand exceeds supply, a shortage exists and some districts will not be able to fill vacant positions with qualified professionals. When supply exceeds demand, a surplus exists and some well-qualified prospective educators who want to teach will not be able to find positions in the state's public schools. Many Connecticut districts will continue to attract an abundant supply of well-qualified educators to fill positions in most endorsement areas. However, the recent demand and supply data lead us to believe that at least some of the districts in the state will have to be prepared to address a shortage of teachers in specific assignment areas. The challenge to find candidates who meet certification requirements and district needs will be greater for part-time and dual assignment positions.

Table 1 classifies the 18 endorsement areas into two categories: shortage areas for which the state is currently experiencing some shortfall between demand and supply, and for which demand may exceed supply over the next five years if current conditions prevail, and non-shortage areas for which supply is projected to continue to exceed demand through 2003. The classification of an assignment area into each of the two categories is based on the relationship between the estimated additional demand for educators in that area over the next five years and the expected future depth of the supply pool. The table includes annual demand projections and six factors that were considered to investigate the future depth of the supply pool:

- the average annual number of individuals who received a first endorsement in the assignment area (based upon 1996-97 and 1997-98 years) (Since only about half of those endorsed in one year are hired for teaching positions the following year, and since individuals averaged 1.3 endorsements each, the number of endorsements is an over-estimate of the actual number of individuals available to fill positions annually);
- an estimate of the number of returning former teachers, based upon the average number of returning educators for the two previous years;
- the availability of the 'reserve pool,' based on two factors: 1) the previous three-year average of first endorsements to new hires in the assignment area,

and 2) responses from a survey of previously certified educators determining their future availability to staff public school positions;

- the potential transfers of current educators from other assignment areas (i.e. some middle school positions in academic disciplines such as math and science can be filled by individuals who hold K-8 or 4-8 elementary certificates, while positions in technology education or physical education cannot);
- the assignment area's 'expected relative shortage'; and
- whether district personnel directors reported having difficulty filling positions in the assignment area.

Table 1: Projected Educator Supply and Demand by Assignment Area, 1999-2003

<u>Assignment Area</u>	<u>Demand</u>		<u>Supply</u>		Average	Availability	Transfers	Expected	Difficult
	Avg. Ann. Expected Vacancies	Estimate of New Teachers*	Average Estimated Returning Educators	Estimated Total	Expected Number of Unfilled Positions	of the Reserve Pool	from Other Endorsement	Relative Shortage	
<b>Shortage Areas</b>	<b>(1999-03)</b>	<b>Teachers*</b>	<b>Educators</b>	<b>Total</b>	<b>Positions</b>	<b>Pool</b>	<b>Endorsement</b>	<b>Shortage</b>	<b>to Fill</b>
Mathematics	258	132	41	173	85	low	high	1	
Reading	123	47	28	75	48	low	moderate	2	
Applied Education++	238	151	65	216	22	moderate	low	3	
World Languages**	188	120	38	158	30	low	moderate	4	
The Arts	245	180	56	236	9	moderate	low	5	X
Physical Sciences (Chemistry/Physics)	89	71	12	83	6	moderate	high	6	X (dual assign.)
Speech & Language	87	64	25	89	(2)	low	high	7	X
Library Media Specialist	52	41	15	56	(4)	low	moderate	8	X
Health/Physical Education	160	135	31	166	(6)	low	low	9	X (part-time)
Special Education	415	445	141	586	(171)	low	low	10	
<b>Non-Shortage Areas</b>									
Elementary Education	1031	1714	218	1932	(901)	high	high		
English/Language Arts	292	226	50	276	16	high	high		
Bilingual and TESOL	73	84	20	104	(31)	low	moderate		X
History/Social Studies	233	233	38	271	(38)	high	high		
Life/Natural Sciences	153	139	29	168	(15)	moderate	high		X (dual assign.)
Other Teacher+	42	135	29	164	(122)	moderate	high		
Pupil Personnel Services	237	281	73	354	(117)	high	high		
Administrator	171	364	38	402	(231)	high	high		X (asst prin/prin)
<b>Total</b>	<b>4087</b>	<b>4562</b>	(endorsements)						
		<b>3555</b>	(individuals)						

\* Includes newly endorsed educators and individuals who received endorsements through the Alternate Route Program. This represents total endorsements and overestimates supply. If people receive multiple endorsements, they are counted in each endorsement area. Recently, only one-half of those newly-certified,

get jobs the following year. (Annual averages based upon 1996-97 and 1997-98 endorsements.)

\*\* Spanish, French and Latin account for a majority of the shortage in World Languages.

+ Other Teacher includes: Computer Science, Driver Education, Other Secondary Teacher, School Nurse-Teacher and Teacher of Non-English Speaking Adults.

++ Applied Education - Shortages in technology education, consumer home economics and business educators.

### **Nonadministrative Shortage Areas**

Some districts in the state are likely to continue to find difficulty filling classroom positions with well-qualified teachers for the following assignment areas:

- **speech/language pathology,**
- **applied education, currently technology education and home economics, with an increasing demand for business education teachers,**
- **world languages, particularly Spanish, French and Latin, and**
- **library/media specialists.**

Assignments within these groups have been among the top five relative shortage areas for at least the last five years, and in some cases since 1987, and the supply data suggest that a shortfall is likely to continue over the next five years. The problem of filling positions in these areas may be more acute for the state's large urban and rural districts than for its small cities and suburban districts.

Candidates generally report they limit their search geographically, and report they apply to suburban districts more frequently than urban or rural. Districts that need to fill multiple-endorsement and part-time, rather than full-time, positions will also find difficulty doing so. While districts have reported difficulty in finding qualified applicants by the start of school, they appear to fill many open positions over the year as evidenced by the small percentage of durational shortage area permits granted. In 1998-1999, 88 durational shortage area permits were given, about one-third (31) of these were for World Language positions, primarily Spanish.

The need for **speech and language pathologists** has consistently been ranked at or near the top of the relative shortage list since 1987, and districts are likely to continue to find difficulty in filling some positions. The reserve pool is shallow and the specialist nature of the certification for speech and language pathologists limits transfers options from other disciplines.

**Special education** has risen in relative shortage between 1997 and 1998. Even though districts were able to fill most of their vacancies by the beginning of the 1998-99 school year, 25 positions were left vacant as of October 1, 1998, because districts were unable to find qualified applicants. There is some potential for districts to have greater difficulty in filling special education positions over the next five years than they have in the past. While the number of first endorsements in special education has been high over the last five years, many teachers who are certified in special education also hold endorsements in elementary education. Therefore, the number of annual first endorsements is likely to be an overestimate of the number of individuals who would be willing to fill special education positions. In addition, special education is the classroom assignment area that has averaged the largest number of continuing teachers who transferred to other assignments, approximately 70 annually over the last three years.

For **applied education** (technology education and home economics) and **world languages**, the annual number of newly certified individuals continues to fall short of the number of new hires

needed. Districts indicated that they had few applicants for positions in these two assignment areas. The availability of candidates is compounded by the limited pool of former teachers and previously certified individuals, and the only moderate likelihood of drawing current staff members who are certified in the discipline from other assignments.

The demand for school **library media specialists** is expected to average about 50 per year over the next five years. This does not include the demand to hire library media specialists where none currently exist. In 1998, 48 of the 217 schools that enrolled students in Grade 8 did not employ a certified library media specialist at least halftime. Over 200 elementary schools did not have a library media professional on staff at least half time. Because of the nature of the position, schools typically have one school library media specialist and most fill full-time positions. Unless new schools are added or schools closed, the total demand for library media specialists will be relatively unaffected by the upcoming enrollment increases in middle and high schools or by the upcoming decline in elementary enrollment. Some districts are likely to have difficulty filling school library media specialist positions in the near future. The problem could be exacerbated if districts build new schools to respond to increasing enrollment. Districts in the state have ranked school library media specialist among the top five shortage areas for the past two years and described the recent applicant pools as relatively low in quality. In recent years, the state has been issuing fewer endorsements annually than the number of library media specialist positions that were filled. In addition, because school library/media specialists tend to be older, most who leave over the next five years are not likely to return. As a result, the 'reserve pool' is likely to be quite shallow and provide a limited source of future supply. An alternative route to certification program for school library media specialists will be operational in the Fall of 1999.

Five assignment areas, **the arts, mathematics, the physical sciences (physics, chemistry), physical education and health, and reading** (remedial reading), are expected to realize some shortages during the next five years. There are several factors that contribute to the potential for shortages in all of these areas. In each of the last five years the state has not certified a sufficient number of teachers in most of the areas to fill the equivalent of the following year's need for new teachers. As a result, districts have drawn from the 'reserve pool.' Districts reported that positions in several of these assignments were left unfilled at the beginning of the 1998-99 school year because no candidates applied or no qualified candidate applied. Also, several of these assignment areas had large proportions of pre-retirement teachers located in middle and high schools where enrollments will continue to increase, as well as many teachers in part-time positions. Since only a small number of individuals in the state hold more than one part-time position, a greater number of certified teachers will be needed to fill the part-time positions that districts require than would be needed to fill their full-time equivalent.

The demand for **mathematics** teachers is expected to increase in 1999, followed by a slight decline through 2003. The demand for physical science (physics and chemistry) teachers will trend



upward through 2003. During 1998, districts reported an average of only three applicants for each vacant physics position and nine for each vacant chemistry position, and indicated that the pool of candidates was low in quality. Both groups have the majority of their teachers assigned to positions at the middle and high school levels, where enrollments will continue to increase over the next three to five years, and have relatively large proportions of pre-retirement aged teachers. Some of the near-term shortfall in mathematics and physical science teachers could be offset by encouraging well-qualified teachers who are currently teaching in the upper elementary grades to transfer into middle school mathematics and science positions (i.e., teachers holding Grades 4-8 or K-8 certificates). Similarly, a portion of the new mathematics and physical science positions at the high school level could be filled by some current teachers in assignment areas such as the life sciences and social sciences who hold additional endorsements in mathematics and the physical sciences.

The demand for **art and music** teachers is expected to increase in 1999 and then decline to stay at a fairly constant level through 2003. Within the arts, music is one area to monitor closely. At the beginning of the 1998-99 school year, 31 general music positions were vacant in the state, the largest number among all the 51 subject areas ranked in the Fall Hiring Report, moving music's relative shortage ranking to seventh out of fifty-one assignments. District recruiters reported difficulty in filling both music and art positions during the current school year. Because of their specific training, music and art have more limited supply sources than many other assignment areas from which to draw to offset a shortages. As a result, districts may need to consider expanding recruitment activities when searching for teachers to fill arts positions.

Like the arts, demand for **health and physical education** teachers is expected to increase in 1999 and the decline slightly to remain fairly stable through 2003. Prior year's certification-to-hires ratios and the specialist nature of the certification which precludes transfers from other assignment areas, along with district personnel directors' reports of difficulty filling part-time positions in 1998 suggest shortages are likely to continue for some districts in the state, and that those districts will need to pursue a wider range of recruitment options if they are to fill all positions.

**Reading** is composed of the following endorsement areas: reading and language arts consultant and remedial reading/remedial language arts teachers. Districts are expected to hire about 123 new reading teachers annually over the next five years, with some new positions targeted at early elementary grades to improve reading performance. Nearly three-fourths of the current staff is in the pre-retirement age groups, indicating that those who leave are not likely to return. Districts have had difficulty in the past hiring well-qualified remedial reading/language arts teachers, ranking them in the top 10 relative shortage areas, and reported finding recent applicant pools for remedial reading/language arts teachers relatively low in quality. In the past districts have drawn the teachers needed to fill specialized reading positions from their continuing staff of dual-certified teachers who previously filled elementary or English positions, and it appears that they will have to continue to do so at least to fill near-term staffing

needs. With changes in certification of reading teachers, however, it is difficult to predict movement into and out of reading positions.

### **Nonadministrative Non-Shortage Areas**

If current certification and reserve pool trends are maintained, the state will continue to have an adequate supply of candidates to fill positions in the following classroom assignment areas for at least the next five years: elementary education, language arts and English, history and social studies, other teacher (computer science, driver education, other secondary, and teachers of non-English speaking adults), and pupil personnel services staff. Because of the large number of annual new endorsements and the depth of the reserve pool for these assignment areas, districts should have more than adequate applicant pools from which to select well-qualified candidates for full-time and part-time positions. It is likely that some of the individuals who are certified in these areas will have difficulty finding positions, particularly those who are very selective about the districts where they apply and the types of assignments they are willing to accept.

Bilingual and TESOL teachers work with children whose first language is not English. Projections indicate that the state's new demand will remain fairly constant over the next five years. The proportion of part-time bilingual and TESOL positions that newly hired teachers filled increased from 5.8 percent in 1996 to 20.8 percent in 1998, indicating that it is possible that a greater number of individuals will be needed in the future to fill portions of full-time equivalent positions that may be distributed throughout the state. It is likely that these may exist in districts that are not contiguous with the state's more diverse urban centers. District personnel directors have reported that they find difficulty in filling bilingual and TESOL positions and a survey of the 1997 newly certified educators who had not secured Connecticut public school positions found virtually no new flow of bilingual and TESOL teachers into the state's 'reserve pool.' To staff new bilingual and TESOL positions in the past districts often have hired continuing educators from other assignment areas. Given the continuing demand for bilingual and TESOL teachers, particularly the increasing need for part-time teachers who specialize in this assignment area, it is likely that districts will have difficulty finding well-qualified candidates for the positions they need to fill. The problem will be more acute for the state's smaller and more remote districts than for its largest cities and adjacent suburban districts. Moreover, hiring qualified bilingual teachers has been a continuous problem because of the districts' use of the Connecticut bilingual waiver provision to fill positions. If the waiver provision was not available, bilingual certainly would be a shortage area. This area should be watched closely because, in July of 2001, the waiver provision will be eliminated.

Pupil support services staff include professional staff members who typically work with students outside the classroom -- counselors, school psychologists and school social workers. The certification for these assignment areas requires at least a master's degree and prior work experience with students.

Currently there is an ample supply of educators in the state who are certified to fill pupil support services positions over the next five years. However, the vocational-technical schools have reported difficulty in filling counselor positions. Many people who are certified in pupil support services are currently employed in the state's public schools in other professional positions, most of whom are classroom teachers. Whether current teachers and professional support staff members are willing to migrate from the positions that they currently hold to pupil support positions is contingent on whether they view economic and noneconomic incentives for moving to pupil support positions as more attractive than those for staying in the positions that they currently hold. Since it is likely that public school educators' salaries will continue to be determined using the uniform salary scale based on experience and education level, classroom teachers will continue to pursue master's and higher level degrees. Some will choose to broaden their career possibilities in public school education by completing degrees that certify them for pupil support assignments.

### **Demand and Supply for Filling Administrators Positions**

Connecticut public school districts are expected to hire an average of 171 new administrators annually over the next five years. Most of the new administrators will be hired to replace retirees, although some new entry-level positions, such as assistant and associate principal, are likely to be created at the middle and high school levels to respond to enrollment increases. More than half of the state's annual new administrative hires, historically, have been continuing educators who worked in other public school assignment areas during the previous year. This translates into an actual demand for about 85 new administrators per year and about 85 continuing educators who migrate into administrative positions from other assignment areas.

Administrative assignments below the level of superintendent require the 'intermediate administrator' endorsement. The superintendent position requires a different endorsement. Between October 1, 1997, and September 30, 1998, 460 educators were awarded intermediate administrative endorsements, 180 received their first Connecticut certificate, and 280 added the certificate to their previously earned professional endorsements. There were 29 new endorsements for department chairs, 25 for superintendents, 422 for intermediate educators, and 25 for school business administrators. (Some individuals received multiple administrative endorsements.)

There are almost 2,400 educators working in the public schools who hold administrative certification, but are working in a non-administrative role, 1,700 of whom are between the ages of 35 and 54, and 309 are serving as department chairperson. In addition, 1,275 former educators who left public school positions since 1992, are currently younger than age 60, are certified to hold administrative assignments, and may be part of the 'reserve pool'.

There are 144 educators who hold superintendent endorsements but are working in a different position. The majority of individuals who hold the superintendent certificate but are employed in other assignments are white (136) and male (99). The largest number of these educators is currently employed in principal (55), assistant superintendent (40), and in pupil personnel assignments.

The number of educators who hold administrative certification in the state suggests that there is more than an adequate number of individuals who are eligible to fill current and future public school positions. Yet, during the past two years some districts have expressed concern that they have had difficulty attracting a pool of well-qualified candidates for administrative vacancies. The key issue for Connecticut over the next five years will not be whether we have a sufficient number of well-qualified individuals available to fill administrative positions, but how we can create incentives to draw talented, experienced educators into administrative jobs. In a survey done by the National Associations of Elementary and Secondary School Principals, looking into potential administrative shortages, “discouragers” were identified which preclude large numbers of applicants. Compensation insufficient compared to responsibilities was most often identified as the reason discouraging applicants. Time required on the job and stress were the next most frequent. During the 1998-99 school year, educators in non-administrative positions who held the intermediate administrator certificate earned an average of \$62,400, compared with administrators holding administrative positions, earned an average salary of \$81,700. The \$19,300 differential may not be a sufficient financial incentive to draw teachers to year-round positions requiring more demanding and less student-centered responsibilities. The nonfinancial aspects differentiating administrative positions from nonadministrative positions, however, play a critical role as well in capable educators' decisions to pursue or not pursue administrative positions.

### **Connecticut at a Glance - A Summary of the State Statistics for 1998**

There are many factors that affect the demand for public school educators and the supply of educators who will be available to fill future public school positions in the state. The accuracy of projections relies on the extent to which future conditions mirror those that currently determine demand and supply. The following set of statistics for the 1998-99 school year provides a context underlying the previous discussion of public school educator demand and supply in Connecticut.

Factors determining demand in 1998-99:

- 87% of the school-age children in the state, 545,663, attend public schools;
- Public school staffing ratios are approximately 15 students per teacher, 200 students per support staff member (counselors, school social workers, school psychologists), and 220 students per administrator (The statistic of 15 students per teacher is for purposes of the demand calculation and includes all teachers and all students. It does not represent average

class size. In 1997-98, the average class size for Kindergarten was 19.0; Grade 2, 20.5 ; Grade 5, 21.6; Grade 7, 21.9, and High School, 20.1)

- 2,466 educators left public school positions between fall 1997 and 1998, for an attrition rate of 5.5%; retirees accounted for about 40% of the educators who left;
- The 1998 Fall Hiring Report found that districts advertised 4,331 vacancies for the school year, up 703 from the previous year;
- 327 full-time and 88 part-time positions were left unfilled as of the October 1st date. However, many of these positions were eventually filled as evidenced by the low number (88) of durational shortage permits granted;
- The largest number of unfilled positions occurred in speech and language pathology, world languages, library/media specialist, mathematics, and the arts;
- 46,566 teachers, professional support staff and administrators currently hold public school positions, 3,873 of whom were new hires in the state's public schools between November 1997 and October 1998;
- 920 continuing educators changed districts and 971 changed assignment between 1997 and 1998, with 217 of them changing both district and assignment;
- An increasing number of districts are moving from half-day kindergarten to increased-time or full-day kindergarten, and instituting elementary and middle school world language and computer technology programs; and
- The state implemented educational initiatives to support reading readiness in the early elementary grades and to fund new books for school libraries.

Factors affecting the supply of public school educators:

- The number of new freshmen enrolling in the state's public colleges and universities has been increasing since 1995 and is expected to continue to increase;
- During the last four years, the fourteen Connecticut's higher education institutions have annually produced about 2,500 students who have completed a teacher preparation program at the undergraduate or graduate level;
- Connecticut has some of the highest standards in the nation for the certification of public school educators;
- 36 certification areas require candidates to pass a PRAXIS II subject area, 34 of which have the highest or second highest pass score for the states requiring the exam;
- The PRAXIS II overall pass rate is 89 percent;
- In the year prior to October 1, 1998 the state awarded 4,820 first endorsements certifying 3,745 new individuals for public school positions;

- 1,654 of the newly endorsed educators were hired to fill public school positions for the 1998-99 school year, representing 44% of those hired;
- The state's reserve pool contributed 921 (24.7%) former Connecticut educators to the 1998 new hires, and 1,158 (31.0%) other individuals with no Connecticut experience who were certified prior to September 1, 1997;
- 1,994 (53.4%) of the new hires were novices;
- Minority educators continue to account for approximately only seven percent of the state's total professional staff and about nine percent of the annual new hires, even though the number of minority students enrolled in the state's colleges and universities in 1998 was 26,688, up 43.1 percent over the 1989 level;
- Districts reported a shortage of substitute teachers and smaller, lower quality applicant pools for vacancies than in the past;
- The reserve pool consists of 4,546 former Connecticut educators, averaging three endorsements each, who left Connecticut public schools since 1992 and are currently younger than age 60, (While there are many people certified prior to 1992 and not currently teaching who potentially could be part of the reserve pool, based upon national data and our survey of non-teaching new certificants, the probability of them applying for teaching positions is relatively small.);
- Candidates for public school positions in 1998 were very selective, applying to about five to eight districts most within a small geographic radius of their homes;
- In the most recent SAT administration, 3,343 Connecticut high school seniors (12.4% of the state's college bound students) indicated they planned to pursue a career in education, up from 2,546 (10.0%) five years ago; and
- In each of the last two years, 160 students have completed the alternate route to certification program (up from 120 in previous years). In 1997-98, 115 obtained teaching positions [science (17), arts (27), World Language (11), middle grades (39), math (8), English (5), and social studies (8)].

## **Recommendations to Offset Potential Teacher and Administrator Shortages in Connecticut**

Below is a list of strategies that are recommended to offset potential teacher and administrator shortages.

### **1. Create a multifaceted public relations and information campaign focusing on recruitment and retention of well-qualified educators.**

- Widely disseminate information on expected shortage and non-shortage assignment areas using a variety of distribution media (web pages, bulletins, and advertisements).
- Provide information and encouragement for current elementary teachers to gain middle or high school certification in shortage areas.
- Work with the Connecticut Education Association and the American Federation of Teachers to promote Connecticut as a state with an excellent quality of life, attractive teacher salary scales, and successful and innovative educational programs.
- Target students early in their career decision process and preparation (middle school, high school and community college), as well as those in teacher preparation and other college programs.
- Draw upon recent retirees from education to fill vacancies in part-time and shortage areas by creating ‘emeritus status’; and investigate lessening the financial restrictions for retired teachers for work.
- Support the RESC initiative that created a statewide website listing all district vacancies and providing the ability for candidates to apply for jobs on-line.
- Participate in regional and federal initiatives, such as Troops to Teachers and the Northeast Regional credential.

### **2. Disseminate best practices in teacher recruitment, hiring practices, teacher support and retention efforts.**

- Solicit information from districts on innovative and successful teacher recruitment and hiring practices, and disseminate to all districts. Include information on LEA practices that focus on building human capacity through the initiation of professional activities such as encouraging collaboration with peers, encouraging participation in decision making and celebrating equity and excellence in teaching.
- Collect and disseminate information on successful aspirant programs for prospective administrators and propose new models to attract highly qualified educators.

**3. Expand the number and types of alternate-route-to-certification programs.**

- Include a year-round alternate-route program for shortage areas, ( e.g., school library media specialist advanced alternative preparation will be operational in the Fall of 1999). Focus on attracting minorities and mid-career people to education careers.

**4. Consider interdistrict sharing of teachers for specialized positions.**

- Facilitate hiring teachers for part-time assignments in such areas as Advanced Placement courses, special education, middle grade world language, instrumental music and voice by combining part-time positions in near or adjacent districts to create full-time teaching assignments. Use the RESCs to coordinate regional information about the part-time needs of the districts they serve so part-time positions can be combined.

**5. Emphasize recruitment and retention of minority staff.**

- Publicize current loan forgiveness programs or grants for new teachers in shortage areas, focusing on minority applicants. Encourage and initiate new programs.
- Redesign the Teaching Opportunities for Paraprofessionals program to encourage minorities to pursue teaching careers.
- Create year-long, evenings and weekends, alternate route to certification programs with priority for minority applicants and to meet the needs of urban and priority school districts.
- Provide small state grants for middle and high schools to operate future teacher clubs, and take additional initiatives, such as summer college experiences, to actively recruit public school students into the teaching profession.
- Encourage and staff regionally coordinated recruiting in New York, Boston and nationwide at historically black colleges and colleges with large Spanish-speaking student populations.
- Convene Connecticut colleges and universities, through the Department of Higher Education, to discuss on-campus activities to stimulate interest of minority students in teaching.
- Encourage PreK-12 public schools to provide opportunities for students to participate in ‘teaching’ experiences such as peer tutoring, cross school and grade tutoring, service learning, library reading program, etc.
- Encourage two-and four-year colleges and universities and adult education to provide ‘teaching’ opportunities to students.



## **Section II**

### **Discussion of Methodology Used to Estimate Supply & Demand**

In this section, the analysis of demand is fully discussed in relation to enrollment projections, educators' attrition, retirement projections and projections of new hires. In addition, supply is discussed with respect to sources of new hires and the viability of the 'reserve pool.' Finally, a survey of personnel directors is highlighted to reflect their experiences in recruiting and hiring new teachers and administrators.

#### **Demand**

The annual demand for public school educators in Connecticut is the total number of educators districts employ to fully staff administrative, professional support, and classroom assignments to serve all children who choose to attend public schools in the state. The total demand equals the sum of (1) the number of educators from the previous year who continue to work in the state's public schools, and (2) the number of additional educators who must be hired to replace those who have left, and (3) the number of educators needed to fill newly created positions to respond to enrollment changes or policy initiatives (e.g. reducing K-3 class sizes, changing graduation requirements).

To estimate the future annual demand for public school teachers, professional support staff and administrators, the Connecticut State Department of Education (CSDE) has developed an educator demand model using cohort survival analysis. The model, which has been used to estimate the future demand for educators in 18 assignments, takes into account the following factors:

1. annual projected changes in enrollment at the elementary, middle, and high school levels;
2. age-specific retention rates for continuing educators (based on the average of the retention rates for 1996-98) for each assignment group;
3. the age distribution for the annual pool of new hires (based on the 1998 age distribution) for each assignment group;
4. district hiring response to enrollment changes at the three school levels;
5. statewide policy initiatives requiring additional teachers;
6. the estimated increase in retirements due to the July 1, 1999, changes in the Connecticut Teacher Retirement Board retirement proration rates.
7. net transfers among assignment areas;
8. an adjustment for the shifting of continuing staff from part-time to full-time positions; and
9. unfilled vacancies from the 1998-99 school year.

Demand models have been estimated for 18 assignment area subgroups for two reasons. First, the age distribution of continuing educators and age-specific retention rates differs across assignment areas. Second, projected enrollment changes over the next decade differ for elementary, middle, and high schools and, as a result, the types of teachers that districts will hire will have to meet the certification requirements for the specific assignments the teachers will hold. Annual retention and enrollment data are used to project the number of educators who will continue from one year to the next and the total number of educators needed annually to meet changes in demand. The projections are then used to calculate the number of new positions districts will need to fill, taking into account part-time hiring patterns in each assignment area and inter-assignment transfers.

### Enrollment Projections

Table 2 contains actual enrollment figures for the elementary (K - 5), middle (6 - 8), and high school (9 - 12) students enrolled in Connecticut public schools in 1998 and projections for 1999 to 2003, and totals which also include public school students in ungraded classrooms. Over the five year period public school enrollments will increase from their current level of 545,663 to peak in 2001 at 557,700, an increase of about 12,100 students, and then decline slightly to 556,050 in 2003. Since these projections are aggregated to the state level, they do not accurately depict changes that may take place within individual districts, only statewide trends. For example, although K - 5 statewide enrollments are projected to decrease over the next decade, some districts will experience increases in elementary school enrollment because of housing development opportunities in their communities.

Year	Elementary	Middle	High	Total*
1998 (actual)	263,461	122,984	144,832	545,663
1999	262,000	125,650	149,460	551,440
2000	258,330	128,280	153,660	555,280
2001	254,150	130,900	157,400	557,770
2002	249,520	131,570	160,710	557,620
2003	245,690	129,970	164,200	556,050

Table 2: Connecticut Public School Enrollment Projections 1998-2003

\*Ungraded enrollment included in total

### Educator Attrition

Table 3 summarizes the 1998 attrition rates for each of the eighteen assignment areas, and the proportion of pre-retirement educators currently working in the state's public schools who are in the pre-retirement age groups of at least 56 and at least 51 years old. Attrition rates between 1997 and 1998 varied across assignment areas with the highest among administrators (7.1%) and pupil support staff (6.0%) who tend to be older, on average, than classroom teachers. Among teachers,

applied educators such as those in the business, technology education and home economics disciplines (6.6%), English (6.4%) and world languages (6.4%) had the highest attrition rates and kindergarten (4.7%), special education (4.7%), and health/PE (4.7%) had the lowest rates. Overall, Connecticut attrition rates are considerably below national levels. The 5.5 percent overall annual attrition rate translates into a rate of over 25 percent over a five-year period, and over 50 percent over a ten-year period.

During the fall of 1998, the state's public schools employed 46,566 full- and part-time professionals. Of these, 15.8 percent were at least age 56, and 22.7 percent were 51 to 55 years old. The proportion of the state's public school professionals who were at least 51 years old has increased from 23.4 percent in 1992 to 38.5 percent in 1998.

Assignment	Attrition Rate	Percent at least age 56	Percent at least age 51
Elementary	5.1	14.9	37.2
Kindergarten	4.7	12.7	30.3
Reading	4.9	23.3	54.3
Special Education	4.7	7.7	21.0
Bilingual	5.7	15.3	33.1
English	6.4	18.0	43.3
World Language	6.4	14.0	41.0
Mathematics	5.3	16.7	44.7
Physical Sciences	5.5	19.2	45.9
Life Sciences	5.2	15.7	37.9
Social Studies	5.3	19.8	45.9
The Arts	5.6	12.3	30.6
Health, Physical Ed.	4.7	10.3	30.2
Applied Education	6.6	18.4	44.3
Other Teacher	5.0	18.9	44.4
Pupil Support Services	6.0	20.4	43.0
Librarian/Media	5.7	22.8	50.9
Administrator	7.1	27.2	61.4
Total	5.5	15.8	38.5

Table 3: 1998 Attrition Rate and Pre-retirement Age Distribution of Connecticut's Current Professional Staff, by Assignment Group

In order to look more closely at the retirement component of attrition, we estimated the number of retirees over the next five years.

Assignment	Total Staff 1998	Estimated Retirees (1999-2003)	Retirees as % of Total Staff
Elementary	13,301	1,774	13.3%
English/LA	2,802	486	17.3%
Math	2,375	448	18.9%
History & Social Studies	2,206	439	19.9%
Life & General Science	1,482	232	15.7%
Physical Science	795	143	18.0%
Foreign Languages	1,467	206	14.0%
The Arts	2,692	303	11.3%
Physical Education/Health	1,960	225	11.5%
Special Education	5,078	302	5.9%
Speech and Language	882	63	7.1%
Applied Education	2,579	458	17.8%
Library/Media	733	129	17.6%
Reading	1,154	248	21.5%
Bilingual/ and TESOL	833	94	11.3%
Pupil Personnel Services	2,588	458	17.7%
Administration	2,631	784	29.8%
Other Teacher	1,008	143	14.2%
<b>Total</b>	<b>46,566</b>	<b>6,935</b>	<b>14.9%</b>

Table 4: 1998 Total Staff and Estimated Retirees (1999-2003)

Overall, we are projecting that 6,935 individuals will retire between 1999 and 2003, which is a 14.9 percent turnover of the workforce.

#### Total Demand Projections Through 2003

Appendix 1 breaks out the projected total number of educational positions needed annually over the next five years by eighteen assignment areas. The state's total public school staff is projected to increase gradually from 46,566 to 48,741 between 1998 and 2003, for a net increase of 2,175 (4.7%) staff members, and rise again in 2004 and then decline slightly after 2004. Total demand for educators in all assignments will remain fairly constant or change in small increments annually through 2003. The projection of total demand for educators is based on the assumption that 4.75 percent of the state's continuing educators will hold part-time positions over the next five years.

#### New Hire Demand Projections Through 2003

Appendix 2 breaks out the projected number of new positions that districts will need to fill annually over the next five years by the eighteen assignment areas. The state will need to produce/attract a minimum of approximately 4,000 new educators annually to fill vacant positions for a total of about 20,000 educators. The projections for new hires estimate the total number of new full- and part-time positions needed for each assignment area. In 1998, part-time positions accounted for about 15 percent of the annual positions that new hires filled, and the proportion of part-time positions varied across assignment areas. More than 20 percent of the new positions in art, music, health/PE, world languages, kindergarten, and bilingual education were part-time. If districts increase part-time hiring, the actual number of new professional staff needed to fill positions in the future will be higher.

## **Supply**

Estimating the future supply of new teachers is a complex task since new teachers are drawn from a variety of sources. Broadly defined, the supply pool consists of all individuals who could meet the certification requirements for public school positions annually. To estimate the supply of available prospective educators to staff the state's public schools in the short term we have limited the count to individuals who are certified to hold professional positions in the state's public schools during a given school year, but were not employed as public school professionals during the previous year.

### Sources of Annual New Hires

The state has three primary sources of educator supply: (1) educators who were first certified during the previous year, including graduates of Connecticut and out-of-state teacher preparations and graduates of the alternate route program who were newly certified in the past year; (2) educators certified prior to the previous year, including the 'reserve pool' of inexperienced teachers who were first certified more than one year ago and the 'reserve pool' of teachers with out-of-state or private school experience who were first certified more than one year ago; and (3) returning educators, including the 'reserve pool' of experienced Connecticut teachers on leave and the 'reserve pool' of experienced Connecticut who have interrupted their career. Table 5 compares the number and proportion of new hires since 1993.

Source	1993	1994	1995	1996	1997	1998
Certified Prior to Previous Year	494 22.5%	644 20.5%	703 26.2%	1388 38.6%	1094 32.5%	1158 31.0%
Certified During Previous Year	537 24.4%	810 25.8%	1089 40.5%	1300 36.1%	1449 43.1%	1654 44.3%
Returning Educators	1169 53.1%	1687 53.7%	895 33.3%	912 25.3%	822 24.4%	921 24.7%
Total	2200	3141	2687	3600	3365	3733

Table 5: Sources of Newly Hired Educators

Between 1993 and 1998 the number of new hires increased steadily from 2,200 to 3,733. The shift in supply sources during the six-year period was quite dramatic, from large proportions of experienced returning former Connecticut public school educators to large proportions of newly certified novices. Earlier in the decade more than half of the annual pool of new hires had some prior professional experience in Connecticut public schools. By 1998 only about one-fourth of the new hires were returning Connecticut public school educators.

Appendix 3 breaks out the number of first endorsements awarded annually from 1989-90 to 1997-98, by the eighteen endorsement areas. While the number of first certified individuals has increased, in four of the five years it has fallen short of the number of educators who were needed to fill new positions during the following school year. From 1990 to 1996 the state issued large numbers of first endorsements for elementary, special education, history/social science, English/language arts teachers, and for pupil support services assignments such as counselors, social workers, and school psychologists. Relatively small numbers of endorsements were issued for reading, physical science, bilingual and TESOL teachers and library/media specialists. The 1997-98 count included individuals who received their first Connecticut endorsement along with previously certified individuals who added a new assignment area to their endorsements. Newly certified individuals averaged 1.3 endorsements each in 1997.

#### 'The Reserve Pool'

The 'reserve pool' includes former Connecticut public school educators who are on leave, educators who interrupted their careers for a period of time, educators who had experience outside of Connecticut public schools, and earlier certified educators with no prior Connecticut professional experience. Its depth varies considerably across assignment areas. Currently, there are about 4,500

former Connecticut public school educators who left positions since 1992, half of whom are younger than age 50 and average three endorsements each. They hold the largest number of endorsements in elementary education (4,219), administration (1,274) and special education (1,214) and the smallest number of endorsements in library/media (156) and bilingual (162) positions. While there are many people certified prior to 1992 and not currently teaching who potentially could be part of the reserve pool, based upon national data and the State Department of Education's survey of non-teaching new certificants, the probability of them applying for teaching positions is relatively small.

Individuals who were certified during the year prior to September 1, 1998 who did not apply for or secure public school positions for the current year account for the most recent flow into the state's 'reserve pool.' The Department surveyed that group to determine their prior job search activities and future plans. Their responses suggest that about 550 prospective educators will continue to be active members of the 'reserve pool,' or about 16 percent of those individuals who were first certified. A large number hold degrees in elementary education and curriculum (180), history/social science (140), and English/humanities (70). The 'reserve pool' gained a modest number of applied educators (35), mathematics teachers (25), art and music teachers (25), special education (15), and health/physical education (15), and few in other assignment areas.

The new 'reserve pool' members were quite selective in their search for positions, submitting a median of eight applications each. These prospective educators also showed a preference for positions in suburban and small city districts over urban and rural districts. About 88 percent submitted applications to suburban districts, 79 percent to small cities, 63 percent to rural districts, and 59 percent to urban districts. The most influential factors in their decisions to apply for a position were the type of assignment, the distance of the district from their home, and salary/benefits.

#### Recruiting and Hiring Educators: Personnel Directors' Survey

In fall 1998, the State Department of Education surveyed school districts regarding their recruitment and hiring practices. An in-depth interview of personnel directors from seven districts within the state complemented the survey data to increase the Department's understanding of district policies and practices in filling certified administrative and classroom positions. The interviews included randomly-selected personnel managers from a large district, and several small and medium sized districts, targeting districts that are experiencing significant growth in their student populations.

The observations of district personnel managers were generally consistent with the results of the 1997 and 1998 'Fall Hiring Report.' Personnel directors indicated that library/media, speech and language pathology, music, art, reading, bilingual, part-time health, and science positions requiring

two endorsements were the most difficult non-administrative positions to fill, along with administrative positions for assistant principals and principals.

Part-time positions and positions requiring dual certification were generally more difficult to fill than full-time positions for single discipline assignments. While districts attempted to attract a diverse pool of candidates, they experienced a shortage of qualified minority candidates.

Districts used a variety of strategies to recruit candidates, particularly internal postings and advertisements in local newspapers. They advertised in regional newspapers, professional journals, and recruited through university placement services to fill more difficult to fill positions. About 20 percent of the districts used the Internet to post openings and about 15 percent accepted applications electronically. Districts that had relationships with higher education institutions with teacher preparation programs and those that could begin their recruitment program before their districts' budget was finalized had a greater degree of success in filling positions than those which were not connected with higher education institutions and were constricted by budgetary time-lines.

### Supply Pool Concerns

The increasing proportion of newly certified individuals hired annually results in a smaller proportion of teachers who become part of the 'reserve pool'. Some assignment areas, such as reading, speech and language pathologist, special education, mathematics, the physical sciences, and library/media specialist, have been drawing consistently from the 'reserve pool' for the last three to five years because fewer individuals have been newly certified annually than were needed to fill new positions. For those assignment areas the 'reserve pool' may not have sufficient depth to continue to offset the difference between the number of new educators needed annually and the number who had been certified within the previous year.

Given the healthy economy and availability of jobs outside of education, individuals who in the past may have persisted longer in the 'reserve pool' in order to secure public school positions, may now have a sufficient number of attractive options outside of public school education to draw them from the 'reserve pool.' Prospective teachers with degrees in the sciences and technology-related disciplines are likely to have more employment options outside of public school teaching than their colleagues who are certified in areas with less transferable knowledge.

Educators who are certified in more than one assignment area can fill dual-endorsement vacancies and have the flexibility to benefit themselves or the districts in which they work by transferring between assignment areas. Generalists certified to teach grades K - 8 (certificate no longer issued) can be used to fill middle grade positions with certified staff in such academic disciplines as language arts, the social sciences, mathematics and science, if districts are unable to attract teachers with discipline-specific certification. In the short-term this provides an alternative to hiring teachers with emergency certificates



or filling positions with long-term substitutes. In the long run, it creates the potential to work against the state's reform efforts to staff middle school classrooms with teachers who have subject area majors.

## Notes

- 1 The 18 endorsement groups in this study drew educators from the certification area designated in parentheses:

Elementary (K, Pre-K, Birth to K, Nursery to K, K-8, K-6, K-3, 1-8, 1-6)

Reading (Reading Consultant, Reading & Language Arts Consultant, Remedial Reading/Language Arts)

Special Education (Deaf, Blind, Partially Sighted, Special Education, Comprehensive Special Education)

Speech and Language Pathology (Speech and Language Pathology)

Bilingual/TESOL (Bilingual, TESOL)

English (English, 7 - 12 and English, middle grades)

World Languages (French, German, Italian, Latin, Russian, Spanish, Other language, Foreign Language, elementary)

Mathematics (Mathematics, 7 - 12 and Mathematics, middle grades)

Physical Sciences (Chemistry, 7-12 and Physics, 7-12)

Life/Natural Sciences (Biology, 7 - 12 and Biology, middle grades, Earth Science, 7 - 12 and Earth Science, middle grades, General Science, 7 - 12 and General Science, middle grades)

History/Social Studies (History, History and Social Studies, 7 - 12 and History and Social Studies, middle grades)

The Arts (Art, PreK - 12 and Music, PreK - 12)

Health/Physical Education (Health, Physical Education, PreK - 12)

Applied Education (Business Education, Vocational Agriculture, Home Economics, Vocational Homemaking, Technology Education, Marketing Education, Occupational Subjects, Trades Related Subjects, Trade and Industrial Education)

Other Teacher (Computer Science, Driver Education, Other Secondary Teacher, School Nurse-Teacher, Teacher of Non-English Speaking Adults)

Pupil Support Services (School Counselor, School Psychologist, School Social Worker)

Library/Media Specialist (Library/Media Specialist, PreK - 12)

Administrator (Intermediate Administrator and Supervisor, School Business Administrator, Vocational School Administrator, School Superintendent, Director of Adult Education, Department Chair)

- 2 Data for this report were drawn from the following sources:
  - 1997 and 1998 Connecticut State Department of Education Staff Files
  - Connecticut State Department of Education Certification Files
  - Connecticut Department of Higher Education 'College Enrollment in Connecticut Through the 1990s' and 'Degrees Conferred by Connecticut Institutions of Higher Education'
  - 1997 and 1998 Connecticut State Department of Education 'Fall Hiring Reports' Surveys:
    - Newly Hired Educators - Fall 1998
    - Non-Teaching New Certificates - Fall 1998
    - District Personnel Directors Survey on Recruitment and Hiring

## Appendix 1: Projected Total Demand by Assignment Group

Assignment Area	Year					
	Actual 1998	1999	2000	2001	2002	2003
Elementary	13,301	13,486	13,563	13,613	13,620	13,621
Reading	1,154	1,209	1,255	1,257	1,256	1,256
Special Education	5,078	5,174	5,213	5,245	5,258	5,267
Speech & Language	882	914	915	915	912	910
Bilingual/TESOL	833	843	845	847	847	847
English	2,802	2,892	2,952	3,001	3,029	3,053
World Language	1,467	1,546	1,575	1,601	1,617	1,631
Mathematics	2,375	2,443	2,498	2,545	2,573	2,588
Physical Science	795	820	837	851	862	872
Life/Natural Science	1,482	1,537	1,570	1,596	1,612	1,625
History/Social Studies	2,206	2,266	2,314	2,353	2,375	2,395
The Arts	2,692	2,755	2,768	2,776	2,779	2,779
Health, Physical Ed.	1,960	1,992	2,006	2,016	2,021	2,024
Applied Education	2,579	2,649	2,674	2,691	2,700	2,708
Other Teacher	1,008	1,027	1,030	1,033	1,034	1,034
Pupil Support	2,588	2,639	2,658	2,673	2,681	2,687
Library/Media	733	761	761	762	762	762
Administration	2,631	2,674	2,677	2,680	2,681	2,682
<b>Total</b>	<b>46,566</b>	<b>47,627</b>	<b>48,111</b>	<b>48,455</b>	<b>48,619</b>	<b>48,741</b>

## Appendix 2: Projected New Annual Demand for Full and Part-time Educators by Assignment Group

Assignment Area	Year						Average 1999-03
	1998 Actual *	1999 **	2000	2001	2002	2003	
Elementary	1,138	1,077	1,015	1,024	1,010	1,030	1,031
Reading	66	149	152	104	110	117	123
Special Education	468	464	414	409	388	400	415
Speech & Language	77	101	89	82	78	87	87
Bilingual/TESOL	78	73	69	77	67	77	73
English	287	311	299	292	277	281	292
World Language	153	232	185	178	172	174	188
Mathematics	187	268	255	260	252	253	258
Physical Science	62	88	87	89	88	92	89
Life/Natural Science	152	166	156	151	147	143	153
History/Social Studies	188	237	235	234	226	231	233
The Arts	213	285	246	232	231	230	245
Health, Physical Ed.	140	175	154	158	154	161	160
Applied Education	170	274	238	217	224	235	238
Other Teacher	65	51	42	36	41	40	42
Pupil Support	233	256	235	231	231	231	237
Library/Media	48	72	52	44	42	48	52
Administration	166	184	156	164	175	177	171
<b>Total</b>	<b>3,891</b>	<b>4,463</b>	<b>4,079</b>	<b>3,982</b>	<b>3,913</b>	<b>4,007</b>	<b>4,087</b>

\* 1998 numbers include only new educators hired to fill positions.

\*\* 1999 numbers reflect estimates of the number of positions that need to be filled (by both new hires and transfers from other areas) and include those positions left unfilled in 1998.

### Appendix 3: Endorsements of Individuals Awarded First Certificates

Assignment Area	Year							
	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Elementary	1,336	1,315	1,504	1,397	1,522	1,470	1,612	1,815
Reading	127	141	220	148	74	70	53	40
Special Education	314	310	386	434	421	422	439	450
Speech & Language	45	48	53	38	59	59	49	79
Bilingual/TESOL	124	82	226	197	123	99	66	101
English	226	177	206	251	256	225	203	248
World Language	95	96	97	96	98	99	105	135
Mathematics	158	185	146	130	136	145	140	123
Physical Science	57	66	86	40	75	55	66	76
Life/Natural Science	101	92	130	89	105	97	125	152
History/Social Studies	237	247	239	266	232	233	222	244
The Arts	194	174	154	160	164	158	171	189
Health, Physical Ed.	132	142	114	115	109	87	126	143
Applied Education	225	387	137	125	110	118	171	130
Other Teacher	357	296	251	319	211	138	156	113
Pupil Support	199	198	195	221	226	279	283	278
Library/Media	49	31	28	54	50	37	38	44
Administration	535	476	228	325	328	345	267	460
<b>Total Endorsements</b>	<b>4,511</b>	<b>4,463</b>	<b>4,400</b>	<b>4,405</b>	<b>4,299</b>	<b>4,136</b>	<b>4,292</b>	<b>4,820</b>
Total Individuals	2,967	3,040	2,934	2,877	3,176	3,140	3,364	3,745
Percentage of those first endorsed who were hired	17.5	19.2	23.8	34.0	37.9	44.8	46.2	54.3

\* This count includes individuals who have been awarded their first endorsement in the assignment area plus previously endorsed individuals in other assignment areas who have been awarded an additional endorsement in a new assignment area.

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